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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/780,424	02/17/2004	Clayton C. Bohn JR.	5853-401	2023
30448	7590	07/25/2005	EXAMINER	
AKERMAN SENTERFITT P.O. BOX 3188 WEST PALM BEACH, FL 33402-3188			BASINGER, SHERMAN D	
			ART UNIT	PAPER NUMBER
			3617	

DATE MAILED: 07/25/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/780,424

Applicant(s)

BOHN ET AL.

Examiner

Sherman D. Basinger

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-27 is/are pending in the application.
- 4a) Of the above claim(s) 26 and 27 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-25 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 February 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. ____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date ____.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1-25, drawn to an anti-fouling coating useable on the hull of a ship or boat, classified in class 114, subclass 222.
 - II. Claims 26-27, drawn to pump, classified in class 417, subclass 48.
2. The inventions are distinct, each from the other because:
3. Inventions I and II are unrelated. Inventions are unrelated if it can be shown that they are not disclosed as capable of use together and they have different modes of operation, different functions, or different effects (MPEP § 806.04, MPEP § 808.01). In the instant case the different inventions because the coating of claims 1-25 is used to keep a surface such as the hull of a ship or boat from fouling. The invention of the second group is a pump used to move fluid through a conduit.
4. Because these inventions are distinct for the reasons given above and have acquired a separate status in the art as shown by their different classification, restriction for examination purposes as indicated is proper.

During a telephone conversation with Neil Jetter on July 20, 2005 a provisional election was made with traverse to prosecute the invention of group I, claims 1-25. Affirmation of this election must be made by applicant in replying to this Office action.
5. Claims 26-27 are withdrawn from further consideration by the examiner, 37 CFR 1.142(b), as being drawn to a non-elected invention.

Drawings

6. The drawings are objected to because the dark shading in figures 2a, 2b, 3, 4a, 6, 8 and 9 make it difficult to see what is being shown. Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

8. Claims 1-3, 7, 16-20 and 24 are rejected under 35 U.S.C. 102(b) as being anticipated by Wooden et al 394.

Wooden et al 394 discloses a dynamic polymer-based coating, comprising at least one patterned polymeric layer 416, 416' for attachment to a surface 410, said polymeric layer including at least one electrically conducting polymer as disclosed in column 4, lines 40-44, wherein a contact angle of said polymeric layer substantially increases or decreases upon at least one of oxidation and reduction by vibration of the film of polymers 416, 416'.

The vibration of the polymeric layer leads to the layer substantially expanding or contracting in at least one direction upon at least one of said oxidation and reduction. Wooden et al 394 also discloses a non-toxic biofouling preventative system comprising a polymer-based coating 416, 416', 418 disposed on a subsurface of a boat or ship 310, said coating comprising a polymeric layer 416, said polymeric layer 416 including at least one electrically conducting polymer as disclosed in column 4, lines 40-44, and a power supply 320 for supplying a dynamic electrical signal to said polymeric layer, wherein a contact angle of said polymeric layer substantially increases or decreases upon at least one of oxidation and reduction responsive to said dynamic signal by vibration of the polymeric layers.

The coating of Wooden et al comprises a pattern of a plurality of

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micro scale or nanoscale features. Such features can any of the microscopic particles making up the layers.

The coating of Wooden et al 394 is a polymer composite, said composite including at least one non-electrically conducting polymer 416 mixed with said electrically conducting polymer, which is the cement discussed in column 4, lines 40-44.

In Wooden et al 394 the polymeric layer is a patterned polymer layer, the pattern being provided by layer 416, layer 418 and layer 416'.

Claim Rejections - 35 USC § 103

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

10. Claims 4-6 and 21-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wooden et al 394.

Wooden et al does not disclose that the plurality of features provide a roughness factor of at least 2, that the roughness factor is at least 8 and that a spacing between adjacent ones of at least a plurality of said plurality of features is less than 2 μm .

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However, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to provide the surfaces of layers 416, 416' and the surface of layer 418 with a roughness factor of at least 8 for effective cementing of these layers together. It would further have been obvious to space the distance between the features less than $2\mu\text{m}$. That the particles making up the layers be closely spaced is required for the layers to be continuous.

11. Claims 10-12, 13, 15 and 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wooden et al 394 in view of Wooden et al 461.

Wooden et al 394 does not disclose an electrode layer disposed beneath said polymeric layer. Note the electrode layer 418 of Wooden et al 461. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to provide an electrode layer similar to 418 of Wooden et al 461 disposed beneath the polymeric layer 416'. Motivation to do so is to use such a layer to aid in activating the piezoelectric layer. Wooden et al discloses layer 118 as being an interdigitated pattern in one embodiment (see column 3, line 15), but does not disclose this pattern as comprising a plurality of micro scale or nanoscale features. However, it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to make this pattern as comprising a plurality of at least micro scale features in order to provide good electrical contact with the piezoelectric layer.

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Wooden et al 394 does not disclose a capping layer disposed on said patterned polymeric layer. Note in Wooden et al 461, column 3, lines 15-18. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to provide a capping layer to layer 416' of Wooden et al 394 similar to that of Wooden 461 et al in order to protect this layer from the water as taught by Wooden 461.

Wooden et al 394 does not disclose a solid polymer electrolyte disposed between said plurality of features of said patterned polymeric layer. However, to incorporate such a layer into layer 418 of Wooden et al 394 would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Motivation to do so is to make the conductive sheet 418 more effective.

12. Claims 8 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wooden et al 394 in view of Wooden et al 461 and Yoshida et al.

Wooden et al 394 as modified by Wooden et al 461 to have a capping layer does not disclose that the capping layer comprises a flexible polymer, said flexible polymer selected from the group consisting of silicones, polyurethanes, and polyamides and such a polymer being a non-electrically conducting polymer.

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Yoshida et al discloses that his piezoelectric polymer film is protected with a sheet of rubber or polyurethane.

In view of the teachings of Yoshida et al it would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to make the capping layer provided to Wooden et al 394 in view of Wooden et al 461 of rubber. Motivation to do so is to provide a layer which will indeed protect layer 416' from the water.

13. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Wooden et al 394 in view of Angelopoulos.

Wooden et al 394 does not disclose layer 418 as comprising at least one polymer selected from the group consisting of polypyrrole, poly(p-phenylene) and polythiophene, and derivatives thereof.

Note the electrically conductive polymer adhesive of Angelopoulos which comprises at least polypyrroles. It would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains to use polypyrroles in the adhesive cement of Wooden et al 394 in view of the teaching of Angelopoulos. Motivation to do so is to provide a cement which will make a good electrically conductive material.

Conclusion

14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Spier is cited to show the pattern of metallic areas. Calvert et al


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is cited to show the surface of conducting polymer on a surface of a substrate with a pattern of blocking material on the surface of the conducting polymer.

15. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sherman D. Basinger whose telephone number is 571-272-6679. The examiner can normally be reached on Monday through Friday, 5:30 a.m. to 2:00 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Samuel J. Morano can be reached on 571-272-6684. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Sherman D. Basinger
Primary Examiner
Art Unit 3617
7/21/05

7/21/05